

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

5 Listing of Claims:

Claim 1 (currently amended): A high-speed optical recording apparatus in an optical storage device for generating a write signal according to an RLL modulation waveform inputted to the high-speed optical recording apparatus, so as to control a writing power of a pickup in the optical storage device, the recording apparatus comprising:
10 a clock generator for generating a first clock signal;
 an adjustment data storage unit for storing a plurality of sets of write strategy parameters, and selecting and outputting a corresponding set of write strategy parameters from plurality of the sets of write strategy parameters according to the RLL modulation waveform;
15 a rough delay unit electrically connected to the clock generator to receive the first clock signal, and further electrically connected to the adjustment data storage unit to receive the selected set of write strategy parameters, the rough delay unit for generating a fine delay parameter according to the selected set of write strategy parameters, and for delaying the RLL modulation waveform according to the first clock signal and the selected set of write strategy parameters to generate a first delay signal; and
20 a fine delay chain electrically connected to the rough delay unit to receive the first delay signal and the fine delay parameter, the fine delay chain for delaying the first delay signal according to the fine delay parameter so as to generate the write signal, the fine delay chain having a plurality of serially connected delay cells, each delay cell delaying the first delay signal by a predetermined period;
25 ~~wherein the RLL modulation waveform is an NRZI modulation waveform, the~~

apparatus generating the write signal according to an encoded modulation bits; the clock generator further generates a second clock signal, the recording apparatus further comprising:

5 a delay adjustment state machine electrically connected to the clock generator to receive the second clock signal, and further electrically connected to the adjustment data storage unit to receive the selected set of write strategy parameters, the delay adjustment state machine for generating a rough delay parameter and the fine delay parameter according to the selected set of write strategy parameters, and for delaying the NRZI modulation waveform according to the second clock signal and the set of write strategy parameters so as to generate a second delay signal; and

10 a rough delay counter or a rough delay shift register electrically connected to the clock generator to receive the first clock signal, and further electrically connected to the delay adjustment state machine to receive the second delay signal in order to delay the second delay signal according to the first clock signal, and to receive the rough delay parameter so as to generate the first delay signal; and

15 the delay cells are a plurality of serially connected inverters or buffers, the fine delay chain further comprising a multiplexer for selecting the write signal from a plurality of outputs of the inverters or buffers.

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Claim 2 (cancelled)

Claim 3 (cancelled)

25 Claim 4 (previously presented): The high-speed optical recording apparatus of claim 1 wherein clock generator comprises a phase locked loop for generating the first clock signal, and a frequency divider for dividing a frequency of the inputted first clock

signal to generate the second clock signal.

Claim 5 (previously presented): The high-speed optical recording apparatus of claim 1
wherein a period of the second clock signal is equal to a base period of the RLL
5 modulation waveform.

Claim 6 (previously presented): The high-speed optical recording apparatus of claim 1
wherein a period of the second clock signal is equal to a multiple of a period of the
first clock signal.

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Claim 7 (previously presented): The high-speed optical recording apparatus of claim 1
wherein a resolution of the delay adjustment state machine delaying the RLL
modulation waveform is equal to a period of the second clock signal.

15 Claim 8 (previously presented): The high-speed optical recording apparatus of claim 1
wherein the rough delay counter comprises a counter, and a comparator.

Claim 9 (previously presented): The high-speed optical recording apparatus of claim 1
wherein a resolution of the rough delay counter delaying the second delay signal is
20 equal to a period of the first clock signal.

Claim 10 (previously presented): The high-speed optical recording apparatus of claim 1
further comprising an NRZI input interface for receiving the NRZI modulation
waveform and generating an address signal.

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Claim 11 (original): The high-speed optical recording apparatus of claim 10 wherein the
EFM input interface generates the address signal according to a previous land
section, a current pit section, and a next land section in the EFM modulation

waveform.

Claim 12 (original): The high-speed optical recording apparatus of claim 10 wherein the rough delay unit is electrically connected to the NRZI input interface to receive the
5 NRZI modulation waveform.

Claim 13 (original): The high-speed optical recording apparatus of claim 10 wherein the adjustment data storage unit is electrically connected to the EFM input interface to receive the address signal for selecting the corresponding write strategy parameter
10 according to the address signal.

Claim 14 (previously presented): The high-speed optical recording apparatus of claim 1 further comprising a data storage setting interface electrically connected to the adjustment data storage unit, and further electrically connected to a microprocessor
15 of the optical storage device to receive the sets of write strategy parameters and storing the sets of write strategy parameters into the adjustment data storage unit.

Claim 15 (previously presented): The high-speed optical recording apparatus of claim 1 wherein the adjustment data storage unit is a volatile memory.

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Claim 16 (cancelled)

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Claim 17 (previously presented): The high-speed optical recording apparatus of claim 1 wherein a resolution of the fine delay chain delaying the first delay signal is equal to the predetermined period.

Claim 18 (previously presented): The high-speed optical recording apparatus of claim 1 wherein the EFM modulation waveform is generated by an EFM encoder of the

optical storage device.

Claim 19 (previously presented): A high-speed optical recording apparatus in an optical storage device for generating a write signal according to an RLL modulation waveform inputted to the high-speed optical recording apparatus, so as to control a

5 writing power of a pickup in the optical storage device, the recording apparatus comprising:

a clock generator for generating a first clock signal;

an adjustment data storage unit for storing a plurality of sets of write strategy

10 parameters, and selecting and outputting a corresponding set of write strategy parameters from the plurality of sets of write strategy parameters according to the RLL modulation waveform;

a rough delay unit electrically connected to the clock generator to receive the first clock signal, and further electrically connected to the adjustment data storage unit to receive the selected set of write strategy parameters, the rough delay unit for generating a fine delay parameter according to the selected set of write strategy parameters, and for delaying the RLL modulation waveform according to the first clock signal and the selected set of write strategy parameters to generate a first delay signal;

15 20 a fine delay chain electrically connected to the rough delay unit to receive the first delay signal and the fine delay parameter, the fine delay chain for delaying the first delay signal according to the fine delay parameter so as to generate the write signal;

the fine delay chain comprising a plurality of serially connected delay cells, an output of each delay cell thereby delaying the first delay signal by a predetermined period corresponding to a number of previous delay cells in the fine delay chain; and

25 the fine delay chain further comprising a multiplexer having inputs coupled to the

outputs of the delay cells, a selecting end coupled to the fine delay parameter, and an output end being coupled to the write signal, the multiplexer for generating the write signal being one of the outputs of the delay cells as selected according to the fine delay parameter.

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Claim 20 (previously presented): The high-speed optical recording apparatus of claim 19 wherein the RLL modulation waveform is an NRZI modulation waveform, the apparatus generating the write signal according to an encoded modulation bits.

10 Claim 21 (previously presented): The high-speed optical recording apparatus of claim 20 wherein the clock generator further generates a second clock signal, the recording apparatus further comprising:

a delay adjustment state machine electrically connected to the clock generator to receive the second clock signal, and further electrically connected to the

15 adjustment data storage unit to receive the selected set of write strategy parameters, the delay adjustment state machine for generating a rough delay parameter and the fine delay parameter according to the selected set of write strategy parameters, and for delaying the NRZI modulation waveform according to the second clock signal and the set of write strategy parameters

20 so as to generate a second delay signal; and

a rough delay counter or a rough delay shift register electrically connected to the clock generator to receive the first clock signal, and further electrically connected to the delay adjustment state machine to receive the rough delay parameter and the second delay signal for delaying the second delay signal according to the first clock signal and the rough delay parameter so as to

25 generate the first delay signal.

Claim 22 (previously presented): The high-speed optical recording apparatus of claim

21 wherein clock generator comprises a phase locked loop for generating the first clock signal, and a frequency divider for dividing a frequency of the inputted first clock signal to generate the second clock signal.

5 Claim 23 (previously presented): The high-speed optical recording apparatus of claim 21 wherein a period of the second clock signal is equal to a base period of the RLL modulation waveform.

10 Claim 24 (previously presented): The high-speed optical recording apparatus of claim 21 wherein a period of the second clock signal is equal to a multiple of a period of the first clock signal.

15 Claim 25 (previously presented): The high-speed optical recording apparatus of claim 21 wherein a resolution of the delay adjustment state machine delaying the RLL modulation waveform is equal to a period of the second clock signal.

Claim 26 (previously presented): The high-speed optical recording apparatus of claim 21 wherein the rough delay counter comprises a counter, and a comparator.

20 Claim 27 (previously presented): The high-speed optical recording apparatus of claim 21 wherein a resolution of the rough delay counter delaying the second delay signal is equal to a period of the first clock signal.

25 Claim 28 (previously presented): The high-speed optical recording apparatus of claim 20 further comprising an NRZI input interface for receiving the NRZI modulation waveform and generating an address signal.

Claim 29 (previously presented): The high-speed optical recording apparatus of claim

28 wherein the EFM input interface generates the address signal according to a previous land section, a current pit section, and a next land section in the EFM modulation waveform.

5 Claim 30 (previously presented): The high-speed optical recording apparatus of claim 28 wherein the rough delay unit is electrically connected to the NRZI input interface to receive the NRZI modulation waveform.

10 Claim 31 (previously presented): The high-speed optical recording apparatus of claim 28 wherein the adjustment data storage unit is electrically connected to the EFM input interface to receive the address signal for selecting the corresponding write strategy parameter according to the address signal.

15 Claim 32 (previously presented): The high-speed optical recording apparatus of claim 20 further comprising a data storage setting interface electrically connected to the adjustment data storage unit, and further electrically connected to a microprocessor of the optical storage device to receive the sets of write strategy parameters and storing the sets of write strategy parameters into the adjustment data storage unit.

20 Claim 33 (previously presented): The high-speed optical recording apparatus of claim 20 wherein the adjustment data storage unit is a volatile memory.

25 Claim 34 (previously presented): The high-speed optical recording apparatus of claim 20 wherein a resolution of the fine delay chain delaying the first delay signal is equal to the predetermined period.

Claim 35 (previously presented): The high-speed optical recording apparatus of claim 20 wherein the EFM modulation waveform is generated by an EFM encoder of the

optical storage device.

Claim 36 (previously presented): The high-speed optical recording apparatus of claim 19, wherein the fine delay chain is for delaying the first delay signal only according to the fine delay parameter so as to generate the write signal.

Claim 37 (previously presented): The high-speed optical recording apparatus of claim 19, wherein the fine delay chain is not connected to and does not utilize a clock signal for delaying the first delay signal to generate the write signal.

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Claim 38 (previously presented): The high-speed optical recording apparatus of claim 19, wherein the delay cells within the fine delay chain are buffers.

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Claim 39 (previously presented): The high-speed optical recording apparatus of claim 19, wherein the delay cells within the fine delay chain are inverters.

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Claim 40 (previously presented): A high-speed optical recording apparatus in an optical storage device for generating a write signal according to an RLL modulation waveform inputted to the high-speed optical recording apparatus, so as to control a writing power of a pickup in the optical storage device, the recording apparatus comprising:

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a clock generator for generating a first clock signal;
an adjustment data storage unit for storing a plurality of sets of write strategy parameters, and selecting and outputting a corresponding set of write strategy parameters from the plurality of sets of write strategy parameters according to the RLL modulation waveform;

a rough delay unit electrically connected to the clock generator to receive the first clock signal, and further electrically connected to the adjustment data storage

unit to receive the selected set of write strategy parameters, the rough delay unit for generating a fine delay parameter according to the selected set of write strategy parameters, and for delaying the RLL modulation waveform according to the first clock signal and the selected set of write strategy parameters to generate a first delay signal;

5 a fine delay chain electrically connected to the rough delay unit to receive the first delay signal and the fine delay parameter, the fine delay chain for delaying the first delay signal according to the fine delay parameter so as to generate the write signal; and

10 the fine delay chain comprising a plurality of serially connected delay cells, an output of each delay cell thereby delaying the first delay signal by a predetermined period corresponding to a number of previous delay cells in the fine delay chain;

15 wherein the fine delay chain is not connected to and does not utilize a clock signal for delaying the first delay signal to generate the write signal.

Claim 41 (new): The high-speed optical recording apparatus of claim 1 wherein the RLL modulation waveform is an NRZI modulation waveform, the apparatus generating the write signal according to an encoded modulation bits.

20 Claim 42 (new): The high-speed optical recording apparatus of claim 1 wherein the clock generator further generates a second clock signal, the recording apparatus further comprising:

25 a delay adjustment state machine electrically connected to the clock generator to receive the second clock signal, and further electrically connected to the adjustment data storage unit to receive the selected set of write strategy parameters, the delay adjustment state machine for generating a rough delay parameter and the fine delay parameter according to the selected set of write

strategy parameters, and for delaying the NRZI modulation waveform according to the second clock signal and the set of write strategy parameters so as to generate a second delay signal; and

5 a rough delay counter or a rough delay shift register electrically connected to the clock generator to receive the first clock signal, and further electrically connected to the delay adjustment state machine to receive the second delay signal in order to delay the second delay signal according to the first clock signal, and to receive the rough delay parameter so as to generate the first delay signal.

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